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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,149

05/03/2006

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7862-88107

8814

42798 7590 12/19/2011  
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EXAMINER

BARROW, AMANDA J

ART UNIT

PAPER NUMBER

1729

MAIL DATE

DELIVERY MODE

12/19/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/578,149	SLIVAR, DJURO	
	<b>Examiner</b>	<b>Art Unit</b>	
	AMANDA BARROW	1729	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 3,5,17 and 18 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 3,5,17 and 18 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Status of Application***

1. The Applicant's after-final amendment filed on 11/22/2011 was received and has been entered. Claims 2, 4, and 7-16 were cancelled. Claim 17 was amended. Claims 3, 5, 17 and 18 are pending before the Office.
2. The texts of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on 10/29/2009.

### ***Examiner's Amendment***

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Norman Kunitz on 12/6/2011.

4. The application has been amended as follows. Please amend claim 17 as written in the after final amendment received on 11/22/2011 to read as follows in order to makes the claims compliant (i.e., the claims are being re-written as they were submitted on 6/14/2011):

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17. (Currently Amended) A cylindrical separator for cylindrical cells, comprising a cylindrical body constituted by a layered structure of a plurality of turns of at least a non-woven sheet material, and having a bottom part closing a first end of said cylindrical body, wherein said bottom part is an integral extension of said cylindrical body, and with the wound layers of said bottom part having a uniform and even bend along an entire circumferential section of the cylindrical body and fused by heat, and wherein said cylindrical body is made from a plurality of sheets placed onto one another and wound together without any binder, and ~~said bottom part has a curved continuous inner and outer surfaces and a substantially uniform thickness.~~ wherein said bottom part has a curved shape with respective wrinkle-free continuous inner and outer surfaces and a substantially uniform thickness.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 17, and thus dependent claims 3, 5 and 18, is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a bottom part having a curved shape with *essentially* wrinkle-free respective continuous inner and outer surfaces (page 4, lines 17-19; page 8, lines 9-11 and lines 24-26), does not reasonably provide enablement for wrinkle-free continuous inner and outer surfaces. The specification does not enable any person skilled in the art to which it pertains, or with which it is most

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nearly connected, to make and/or use the invention commensurate in scope with these claims. Specifically, every mention of the inner/outer surfaces being “wrinkle-free” is preceded by "essentially," and it would not be clear to one of ordinary skill in the art how to make an *entirely* wrinkle-free surface as presently claimed. Appropriate correction is required.

7. Claim 17, and thus dependent claims 3, 5 and 18, is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, the specification supports a bottom part having a curved shape with *essentially* wrinkle-free respective continuous inner and outer surfaces (page 4, lines 17-19; page 8, lines 9-11 and lines 24-26), but fails to support a bottom part having respective wrinkle-free continuous inner and outer surfaces.

For compact prosecution purposes, the claims will be examined according to how they are supported within the specification: the bottom part having *essentially* wrinkle-free respective continuous inner and outer surfaces (page 4, lines 17-19; page 8, lines 9-11 and lines 24-26).

8. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

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relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 3 recites that the sheets comprise at least one layer of a semi-permeable membrane and cellophane in addition said non-woven sheet material. The specification supports that the semi-permeable membrane *is* a cellophane layer (page 5, lines 15-18; page 6, lines 25-29); therefore, the specification fails to provide support for a layer comprising both a semi-permeable membrane and cellophane as claimed. Appropriate correction is required.

For compact prosecution purposes, the claims will be examined according to how they are supported in the specification: the “at least one layer” constitutes a semi-permeable membrane comprised of cellophane (page 5, lines 15-18; page 6, lines 25-29).

### ***Claim Rejections - 35 USC § 102***

9. The claim rejection under 35 U.S.C. 102(b) as being anticipated by Yamashita et al. (US 6,270,833) on claims 17 and 18 is withdrawn because the claims have been amended. All rejections pending from this are also withdrawn due to the dependency nature of the claims on independent claim 17.

Specifically, as indicated in the interview summary issued on 11/15/2011, although there is prior art teaching separators that do not use any binder, the Yamashita reference specifically teaches binder and to form the separator of Yamashita without any binder would be contrary to the teachings of Yamashita. As all of the limitations of claim 2 are now incorporated into claim 17, i.e., *the cylindrical body is made from a plurality of*

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*sheets placed onto one another and wound together without any binder, the rejection is withdrawn.*

10. Claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Duncan et al. (US 4,669,183).

Regarding claim 17, Duncan discloses a separator for a galvanic cell ("cylindrical cell") having at least two cup shaped separator linings 12, 12', each of which consists of a circular bottom and cylindrical side walls which is sized within the cell utilizing a punch 40 and heater block 42 in order to fuse its seams (column 2, lines 6-19). Specifically, the cylindrical separator 10 comprising a cylindrical body is constituted by a layered structure of separator linings 12, 12' which comprise a plurality of turns of the thermoplastic material polyvinyl acetate (i.e., a "non-woven sheet material") (Figures 1 & 2; column 3, line 50- column 4, line 4). Separator 10 has a circular bottom 30 part which is an integral extension of said body, with the wound layers of said bottom part 30 forming a hemispherical bottom after being heat sealed by heated punch 40 (Figures 1-5; column 3, lines 3-15) (i.e., the bottom part having a uniform and even bend along an entire circumferential section of the body and fused by heat). Duncan teaches that the cylindrical body is made from a plurality of sheets 31, 32 and 31', 32' placed onto one another and wound together without any binder (column 2, lines 58-63). Figure 5 illustrates that bottom part has a curved shape with respective wrinkle-free continuous inner and outer surfaces and a substantially uniform thickness as claimed; Duncan further teaches that this is the case as the heated punch 40 allows the separator to conform tightly

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to its hemispherical bottom to minimize bulges in the folds of the separator material (i.e., the bottom part 30 is essentially wrinkle-free) (column 3, lines 35-40).

Regarding claim 18, Duncan teaches that bottom part 30 has a hemispherical shape and illustrates it as outwardly curved as claimed (column 3, lines 3-7; Figure 5).

### ***Claim Rejections - 35 USC § 103***

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duncan et al. (US 4,669,183) as applied to claims 17 and 18 above, and further in view of Devitt (US 3,897,266).

Regarding claim 3, Duncan teaches a plurality of sheets 31, 32 and 31', 32' comprised of polyvinyl acetate material (i.e., "non-woven sheet material"), but fails to disclose at least one layer of a semi-permeable membrane comprised of cellophane in addition to sheets 31, 32 and 31', 32'; however, Devitt discloses analogous art of an alkaline battery cell which contains a separator for preventing the metallic conduction between opposite polarity electrode plates (column 4, lines 43-45). Devitt discloses that conventional non-woven porous separators generally lack uniformity, are overly porous and readily allow and promote growth of zinc dendrites through the porous interstices (column 5, lines 31-40). Devitt teaches that preferred materials are cellulosic materials as they resist attack by electrolyte and are resistant to oxidation and have suitable ranges for air permeability and electrolyte absorption; however, cellophane lacks mechanical strength to properly conform to the contour of the zinc plate (column 5, lines 1-16 and lines 29-31). Thus, Devitt discloses that the separator used in the invention is a cellophane membrane next to the non-woven porous fabric separator such as Pellon, and



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that this layering of the cellophane and non-woven fabric membranes attenuates dendritic growth and prevents metallic conduction between the positive and negative plates (column 5, lines 50-55). Devitt does not disclose the use of any binder between the sheets.

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the separator 10 of Duncan to include a layer of cellophane in addition to the multi-layered separator sheets 31, 32 and 31', 32' because Devitt teaches such a configuration and that this attenuates dendritic growth and prevents metallic conduction between positive and negative plates (Devitt, column 5, lines 50-55).

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duncan et al. (US 4,669,183) as applied to claims 17 and 18 above, and further in view of Tomantschger et al. (US 5,300, 371).

Regarding claim 5, Duncan fails to disclose a thermoplastic sealant arranged at the central zone on the outer surface of bottom part 30; however Tomantschger discloses an alkaline cell in which a thermoplastic sealant may be applied to the bottom of the separator to prevent electrical contact between the negative electrode 14 and the cell container or can 12 (column 13, lines 1-9).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the cell of Duncan to include a thermoplastic sealant at the central zone on the outside of the bottom part 30 as taught by Tomantschger in order prevent electrical contact between the negative electrode and the cell container (Tomantschger, column 12, lines 1-9).

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***Response to Arguments***

13. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

*Slivar (US 6,035,518)* discloses a method of preparing a cylindrical separator comprised of sheet material 10 which is a laminate of a fibrous porous material and a cellulose layer which is wrapped around a mandrel providing a plurality of turns of the material. The document fails to disclose an integral bottom extension as claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMANDA BARROW whose telephone number is (571)270-7867. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Supervisory Patent Examiner, Art Unit 1729